

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the Application of: Mark T. Cranna)
Darriel Miller) Group Art Unit: 3724
Serial No.: 09/695,951)
Filing Date: October 25, 2000) Examiner: Clark F. Dexter
For: Wood Cutting Band Saw Blade)

Dated at Hartford, Connecticut, this 5th day of November 2004.

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APPELLANT'S AMENDED APPEAL BRIEF

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I. INTRODUCTION

In accordance with the provisions of 35 U.S.C. § 134 and 37 C.F.R. §§ 1.191 and 1.192, this Appeal Brief is submitted in triplicate in support of the appeal from the Office action dated October 20, 2003, finally rejecting claims 1-5, 7-11, and 21-40.

A. Real Party In Interest

Appellants have assigned their interests in the subject application to American Saw and Manufacturing Company, Inc.

B. Related Appeals and Interferences

None.

II. STATUS OF THE CLAIMS

The subject application, U.S. Patent Application Serial No. 09/695,951, was filed on October 25, 2000, and the subject application was filed with forty-three (43) claims.

In a first Amendment dated May 9, 2002 original claims 2, 14, 22, 23, 24, 30, 32, 33, 37, 39, and 40 were amended. Claims 6, and 15-20 were canceled, without prejudice. In a second Amendment dated November 20, 2002 claims 2, 9, 12, 23, 27, 30, 34, 36, and 37 were amended, and new claims 41-47 were added. However, claims 41-47 have been withdrawn pursuant to an Office Advisory Action dated October 20, 2003.

A. Status of Pending Claims

Claims 1-5, 7-11, and 21-40 are pending and stand rejected under 35 U.S.C. § 103, and each of these claims are on appeal.

B. Status of Canceled Claims

Claims 6 and 15-20 are cancelled.

III. STATUS OF THE AMENDMENTS

There were no amendments filed subsequent to the final rejection of this application. Appellant filed a Response to Office Action (Final Rejection) under 37 C.F.R. § 1.116 on October 6, 2003, offering arguments to surmount the rejection. An Advisory Action was then issued stating that Applicant has overcome the 35 U.S.C. § 112 rejection to Claim 23 but the remaining arguments contained in the response failed to overcome the other rejections.

IV. SUMMARY OF THE INVENTION

The present invention is directed to a wood cutting band saw blade 10 that when cutting wood produces saw dust and forms a kerf 38. (Specification p5, line 5-p12, line 16; FIG. 1). The band saw blade 10 comprises a cutting edge 14 defined by a plurality of teeth 17, 17', etc... spaced relative to each other, and a back edge 16 located on an opposite side of the band saw blade 10 relative to the cutting edge. The plurality of teeth 17, 17' comprise a plurality of set teeth each having a tip 20, 20', each defining a bend plane 18 (FIG.2), and each comprising a shelf 30, 30', located at least partially between the tip and the bend plane 18 for reducing saw dust passing to the kerf 38 and accumulating on the band saw blade 10. (Specification p5, line 5-p12, line 16; FIG. 1 and FIG. 2).

Preferably, each of the set teeth 17, 17' defines at least one relief surface 22, 22', and a cutting surface 24, 24', where the relief surface 22 extends from one side of the tip 20, 20' in a direction opposite that of the movement of the saw blade and terminating at one end of an

intermediate surface, and the cutting surface 24 extends from another side of the tip 20. Preferably, the shelf 30, 30' includes a shelf surface 34, 34' extending from the cutting surface 24 and terminating at another end of the intermediate surface. (Specification p5, line 5-p12, line 16; FIG. 1 and FIG. 2).

Another aspect of the present invention is directed to a wood cutting band saw blade having a lateral surface and generating dust during cutting of wood. The band saw blade 10 comprises a base having a back edge 16 and a cutting edge 14 defined by a plurality of teeth 17, 17' spaced relative to each other and being located on an opposite side of the band saw blade 10 relative to the back edge 16. (FIG. 1 and FIG. 2). The plurality of teeth 17, 17' comprise a plurality of set teeth, of which each set tooth defines a tip 20, 20', a bend plane 18 and a dust gap "DG" extending approximately between an outer lateral point 40' of the tip 20, 20', and a lateral surface of the base 42. The band saw blade further comprises means for reducing the quantity of dust passing through the dust gap. (Specification p5, line 5-p12, line 16; FIG. 1 and FIG. 2).

A further aspect of the present invention is directed to a wood cutting band saw blade 10 having a lateral surface and generating dust during cutting of wood. The band saw blade 10 comprises a base 15 having a back edge 16 and a cutting edge 14 defined by a plurality of teeth 17, 17' spaced relative to each other and being located on an opposite side of the band saw blade 10 relative to the back edge 16. The plurality of teeth comprise a plurality of set teeth 17, 17' each set tooth defines a tip 20, 20' a bend plane 18 and a dust gap "DG" dimension extending approximately between an outer lateral point 40' of the tip and a lateral surface 42 of the base.

The band saw blade further comprises means for reducing the dust gap dimension. In a preferred embodiment of the present invention, the means for reducing the dust gap dimension

includes at least one shelf 30, 30' formed between the bend plane 18 and the tip of a set tooth 20, 20'. In another embodiment of the present invention, the means for reducing the dust gap dimension further includes a relief portion extending from the tip of a set tooth 20, 20' at an acute angle to a transverse axis of the saw blade 10. (Specification p5, line 5-p12, line 16; FIGs. 1, 2 and FIG. 5).

One advantage of the present invention is that the location of the shelf 30, 30' or like means for reducing the quantity of dust passing through the dust gap minimizes the collection of dust on both the kerf walls 38 and sides of the saw blade.

V. ISSUE ON APPEAL

Whether claims 1-5, 7-11, and 21-40 are properly rejected under 35 U.S.C. § 103 as being unpatentable over Clark (U.S. Patent No. RE31,433) in view of U.S. Patent No. 820,969 to Grelck.

VI. GROUPING OF CLAIMS

The claims on appeal before the Board of Patent Appeals and Interferences are claims 1-5, 7-11, and 21-40. All claims relate to a wood cutting band saw blade.

Pursuant to 37 C.F.R. § 1.192(c)(7), Appellant hereby groups the pending claims for purposes of appeal as follows:

Claims 1-5, 7-11, 21-40 stand rejected under 35 U.S.C. § 103 over Clark et al. in view of Grelck.

The rejected claims do not stand or fall together. As set forth in the Argument below, claims 1, 2, 5, 9-11, 25-30, 34, 35 and 37 are separately patentable, claims 3, 4, 7, 8, 23, 24, 31, 32, 33 and 38-40 are separately patentable, and claims 21, 22 and 36 are separately patentable.

VII. ARGUMENT

Claims 1-5, 7-11 and 21-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over RE31,433 to Clark in view of U.S. Pat. No. 820,969 to Grelck. The Examiner states at paragraph 6 of the Action (page 4): “it would have been obvious to one having ordinary skill in the art to provide such shelves on the band saw of Clark ‘433 at least for the benefits taught by Grelck.” The Examiner’s grounds for rejection are hereinafter traversed, and reconsideration is respectfully requested.

To establish a *prima facie* case of obviousness, the following criteria must be met:

(1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the teachings of the references; (2) There must be a reasonable expectation of success found in the prior art, not the applicant’s disclosure; and (3) The prior art references must teach or suggest all of the claim limitations. M.P.E.P. § 2142. “A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” M.P.E.P. § 2141.02, citing W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540 (Fed. Cir. 1983), cert. denied, 496 U.S. 851 (1984). Further, prior art references that are not analogous art are not properly combinable under § 103. A reference is not analogous art if it is not within the inventor’s field of endeavor and is not reasonably pertinent to the problem with which the inventor was involved. In re Clay, 966 F.2d 656 (Fed. Cir. 1992).

A. There Is No Suggestion Or Motivation In The Prior Art To Modify Clark ‘433 To Include The Shelves of Grelck.

Clark ‘433 is directed specifically to metal cutting band saw blades. Clark ‘433 states: “The present invention relates to saw blades of the type used for cutting metal workpieces, such as band saw blades and hack saw blades.” (Clark ‘433 at column 1, lines 10-

12, emphasis added). Further, Clark '433 is directed to addressing problems unique to metal cutting saw blades, including "reduced cutting noise and chatter, reduced vibration and smoother running". (Clark '433 at column 1, lines 47-40).

In stark contrast to Clark '433, Grelck is directed to wood cutting saw blades, and to addressing "the fact that sawdust settles at the surfaces of cutting of the wood." (Grelck at column 1, lines 8-10). In Grelck's wood cutting saw blade "the front of the saw-tooth is provided with one or more projections, which act as sawdust-removers and remove the sawdust as it is produced . . ." (Grelck at column 1, lines 11-15). More specifically, Grelck teaches setting only the tips of the teeth "so that the thickness of the cut and the loss of material caused thereby are smaller", and forming the sawdust removing projections below the bend plane of the tips on the "front or cutting edge" of each tooth. (Grelck at column 1, lines 20-23, and column 2, line 40).

Thus, Clark '433 is directed to cutting metal workpieces and is not concerned in any way with the problems associated with cutting wood and removing sawdust from the kerf when cutting wood. Grelck, on the other hand, is directed to cutting wood, and to providing "tip set" teeth and sawdust removing projections below the bend plane of the teeth to remove sawdust when cutting wood. Grelck is not concerned in any way with cutting metal workpieces or the problems associated with cutting such workpieces. Therefore, there is no suggestion or motivation in either of the references to apply Grelck's sawdust removing projections, which are usable only for removing sawdust when cutting wood, to Clark's metal cutting saw blade, which is not used to cut wood. Why would one of ordinary skill in the art want to use Grelck's saw dust removing projections on Clark's metal cutting saw blade? Clearly, there is no reasonable basis for concluding that one of ordinary skill in the art would think to do so. The prior art references

do not teach or suggest modifying Clark '433 in view of Grelck as suggested by the Examiner, and therefore it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness for at least this reason.

B. There Would Not Be A Reasonable Expectation Of Success In Applying Grelck's Sawdust Removing Projections To Clark's Metal Cutting Saw Blade.

Each prior art reference must be considered in its entirety, including those portions that would lead away from the claimed invention. M.P.E.P. § 2141.02. Both Grelck and Clark '433 – when considered in their entireties as they must be – effectively teach away from the proposed combination. Clearly, therefore, there would not be a reasonable expectation of success in applying Grelck's wood cutting sawdust removing projections to Clark's metal cutting saw blade.

As set forth above, Clark '433 is directed to cutting metal workpieces, not wood. One of the objects of Clark's invention is to obtain optimum operating characteristics for cutting metal workpieces, "such as reduced cutting noise and chatter, reduced vibration and smoother running, less heat generation, and longer blade life". (Clark '433 at column 1, lines 46-51). In order to achieve this, and as shown typically in FIG. 3, Clark '433 teaches the formation of open gullets 20 and relatively long rake faces 22. Clark further teaches progressively decreasing the gullet depth and pitch of the teeth, and progressively increasing the positive rake angles for the teeth of lesser gullet depth "so that the smaller teeth are rendered more able to dig in and remove a larger chip more comparable in size to that removed by the larger teeth". (Clark '433 at column 3, lines 58-63). Thus, Clark's blade is designed so that it "not only increases the overall cutting speed, but also balances out the impacts on the individual teeth resulting in the improved smooth and quiet operation which characterizes the blades of [his] invention." (Clark '433 at column 3, lines 63-66).

To modify Clark's saw blade to include Grelck's saw-dust removing projections on each rake face or forward cutting edge 22 (FIG. 3) would be contrary to Clark's express teachings and destroy the benefits of his invention. Grelck's sawdust removing projections would increase cutting noise and chatter, increase vibration, and necessarily would cause the blade to not run smoothly and would reduce blade life. Grelck's sawdust removing projections would cause the teeth not only to produce smaller chips, but the reduction in chip load on the shorter teeth would be disproportionate to the reduction in chip load on the larger teeth, thereby further upsetting the balanced tooth loading specifically taught by Clark. Grelck teaches setting only the tips of the saw teeth and forming each projection below the bend plane, and therefore Grelck also teaches away from the claimed invention. The Examiner must consider each reference in its entirety, including those portions that lead away from the claimed invention, and it is respectfully submitted that when Clark '433 and Grelck are properly viewed in this manner, the rejection should be reversed.

C. Clark '433 Is Not Analogous Art To Grelck And Cannot Be Modified In the Manner Suggested By The Examiner For This Additional Reason.

The present invention is directed to wood cutting band saw blades. Why would one of ordinary skill in the art of wood cutting band saw blades look to Clark's metal cutting saw blade when seeking to address the problems associated with removing saw dust from the kerf? Clark '433 is not within the field of wood cutting band saw blades. Rather, as set forth above, Clark '433 is directed specifically to metal cutting saw blades. Further, Clark '433 is not reasonably pertinent to the problem with which the present inventor was involved. As set forth at page 4 of the present specification, the present invention addresses the problem of reducing the quantity of saw dust passing through the dust gap and minimizing the collection of sawdust on the kerf walls and sides of the saw blade. (Amended Specification at page 4, lines 1-3). Clark

'433 does not relate in any way to cutting wood, much less addressing the problem of reducing the collection of sawdust on the kerf walls and/or sides of the saw blades. Thus, Clark '433 is not within the present inventor's field of endeavor and is not reasonably pertinent to the problem with which the present inventor was involved. See In re Clay, 966 F.2d 656 (Fed. Cir. 1992) (a reference is not analogous art if it is not within the inventor's field of endeavor and is not reasonably pertinent to the problem with which the inventor was involved). Accordingly, Clark '433 is not analogous art and cannot be modified by Grelck in the manner suggested by the Examiner for these additional reasons.

D. The Prior Art References Do Not Teach Or Suggest All Of The Claim Limitations.

Even if it were proper to modify Clark '433 in view of Grelck in the manner suggested by the Examiner, which Applicants respectfully dispute, the resulting combination would not meet the terms of the claimed invention. As set forth above, Grelck teaches setting only the tips of the saw teeth and forming each projection below the bend plane. Thus, if one were to modify Clark's blade to include Grelck's sawdust removing projections, the teeth necessarily would be tip set and the projections would be located below the bend plane, as taught by Grelck. There is no teaching anywhere in the references of record to form a shelf or like projection at least partially between the tip and bend plane for reducing saw dust passing to the kerf and accumulating on the band saw blade. The Examiner states that this combination is "old and well known". However, it is respectfully submitted that this conclusion can be reached only through impermissible hindsight reconstruction. Nowhere do any of the cited prior art references teach or suggest forming a shelf or like projection at least partially between the tip and bend plane as recited in the presently amended independent claims.

One of the advantages of the band saw blade of the present invention is that because the shelf is formed at partially between the tip and bend plane, the teeth may define relatively “heavy sets” without reducing the effective dust gap. In other words, the shelf is moved laterally outwardly with the portion of the tooth that is set. This feature is particularly advantageous when cutting wet and/or frozen wood where “heavy” sets may be required to effectively cut such workpieces. Neither Clark ‘433 nor Grelck recognize the problems associated with cutting such wet and/or frozen wood, much less teach the solution of the invention, as recited in independent claims 1 and 27.

The Final Action states at page 4, paragraph 6 that “it is noted that the claims are equally unpatentable over Grelck in view of Clark ‘433”. Although it is believed that this alternative ground for rejection is overcome for the reasons set forth herein, this constitutes a new ground for rejection and the Action cannot be made final. As set forth at M.P.E.P. § 706.07(a), an action cannot be final “where the examiner introduces a new ground of rejection that is neither necessitated by applicant’s amendment of the claims nor based on information submitted in an information disclosure statement.” Here, this alternative ground for rejection was introduced for the first time in the Final Action, and was not necessitated by any amendment or information disclosure statement submission. For example, independent claim 1 stands rejected on this basis, independent claim 1 has never been amended, and therefore this new ground for rejection with respect to claim 1 could not have been necessitated by an amendment. It is therefore respectfully submitted that this possible alternative ground for rejection should be reversed for at least this reason.

E. Claims 3, 4, 7, 8, 23, 24, 31, 32, 33, 38, 39, and 40 Are Separately Patentable, And Claims 21, 22 and 36 Are Separately Patentable.

The cited references also do not teach or suggest means located at least partially between the tip and the bend plane for effectively reducing the dust gap dimension, including at least one shelf and a relief portion extending from the tip of the respective set tooth at an acute angle to a transverse axis of the saw blade, as recited in claim 36. Similarly, none of the references of record teach or suggest a wood cutting band saw blade including a shelf located at least partially between the tip and the bend plane for reducing saw dust passing to the kerf and accumulating on the band saw blade, in combination with (1) a relief portion extending from the tip and having a relief angle (RA) within the range of approximately 0° to approximately 2°, as recited in claim 21, or (2) such a relief portion defining a tangential angle (TA) within the range of approximately 3° to approximately 6° with respect to the side of the blade body, as recited in claim 22. As described at page 10 of the present application, the claimed relief portion, shown typically at 244' in FIG. 5, further reduces the effective dust gap from "EDG" to "EDG 1". This feature is neither taught nor suggested by any of the references of record, and therefore these dependent claims are unobvious over Clark '433 in view of Grelck for this additional reason. The Examiner noted during the interview that these limitations might be readable on any relief surface. However, it is important to note with respect to claim 36, that this feature is part of the "means for effectively reducing the dust gap dimension", and further, that the claim defines the acute angle with respect to a "transverse axis of the saw blade" (as shown, e.g., by the axis "A" in FIG. 2). Other types of relief surfaces, such as the relief surface 22 in FIG. 1, do not function to reduce the dust gap dimension and are not oriented at acute angles with respect to a transverse axis of the saw blade.

Dependent claims 3, 31 and 38 recite a ratio of S1/B within the range of approximately 0.25 to approximately 0.75. These features likewise are neither taught nor suggested by the references of record. One of the advantages of these claimed features is that they enable the blade to prevent choking and provide a desired effective dust gap. (Original specification at page 7, lines 14-20). Neither Clark '433 nor Grelck teach the formation of an effective dust gap, much less one that prevents choking. Rather, in Grelck, the saw dust projections are not set, but rather are located below the bend plane on the unset portions of the teeth. Accordingly, neither Clark '433 nor Grelck recognize the problem of both reducing the effective dust gap and preventing choking, much less teach the solution to this problem as recited in claims 3, 31, and 38. It is therefore respectfully submitted that these claims likewise are not rendered obvious over Clark' 433 in view of Grelck for these additional reasons.

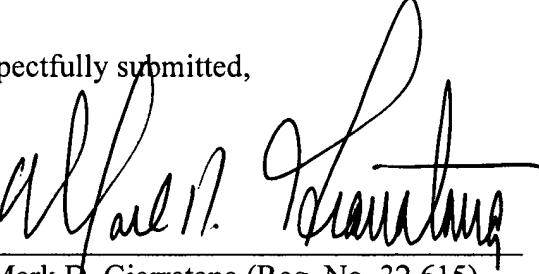
VIII. CONCLUSION

For the foregoing reasons, reversal of the Final Rejection of Claims 1-5, 7-11 and 21-40 is warranted and such action is earnestly solicited.

No additional fee is believed to be required in connection with this filing. However, if an additional fee is required, or otherwise if necessary to cover any deficiency in fees already paid, authorization is hereby given to charge our deposit account no. 50-1631.

Respectfully submitted,

November 5, 2004

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